AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions and listings of claims in this application.

1. (Currently Amended) A method of detaching a layer from a wafer, which comprises:

creating a weakened zone in a wafer to define the layer to be detached and a remainder portion of the wafer, such that the weakened zone includes a main region and a localized super-weakened region that is more weakened than the main region; and

initiating detachment of the layer from the remainder portion at the super-weakened region by applying a controlled detachment force obtained by heating at least the weakened zone wherein the heat is applied substantially evenly over substantially the entire weakened zone, and wherein the heating is controlled for evening the heating applied to weakened zone such that the detachment initiates and propagates from the super-weakened region through the main region to detach the layer from the remainder portion.

2. (Cancelled)

3. (Previously Presented) The method of claim 1, wherein the detachment force is applied to both the super-weakened region and the main region.

4. (Previously Presented) The method of claim 1, wherein the detachment force is obtained by applying energy to weakened zone.

Claims 5. to 7. (Cancelled)

8. (Currently Amended) The method of claim [[7]] 1, wherein the heating of the weakened zone comprises thermally annealing the wafer.

9. (Currently Amended) A method of detaching a layer from a wafer, which comprises:

creating a weakened zone in a wafer to define the layer to be detached and a remainder portion of the wafer, such that the weakened zone includes a main region and a localized super-weakened region that is more weakened than the main region; and

initiating detachment of the layer from the remainder portion at the super-weakened region to impart a controlled detachment force obtained by applying heat substantially evenly over substantially the entire weakened zone, and wherein the heating is controlled for evening the heating applied to the weakened zone such that the detachment initiates and propagates from the super-weakened region through the main region to detach the layer from the remainder portion,

wherein the heat is applied by heating elements that are independently controlled for evening the application of heat to the weakened zone.

10. (Original) The method of claim 9, which further comprises flowing a heat conducting gas over the wafer during thermal annealing.

11. (Original) The method of claim 1, wherein the weakened zone is created by implanting a dose of atomic species in the wafer.

12. (Original) method of claim 11, wherein the super-weakened region is created by implanting an overdose of the atomic species compared to the dose of atomic species implanted in the main region.

13. (Original) The method of claim 12, wherein the atomic species is applied in substantially a single operation to both the super-weakened and main regions.

14. (Original) The method of claim 12, wherein an initial dose of atomic species is applied to the weakened zone, and the overdose is applied to the super-weakened region before or after the application of the initial dose.

15. (Original) The method of claim 1, wherein the weakened zone is created by producing a porous layer in the wafer.

16. (Original) The method of claim 1, wherein the weakened zone extends through a crystalline layer of the wafer.

17. (Original) The method of claim 1, wherein the wafer comprises a semiconductor material.

18. (Previously Presented) The method of claim 9, wherein the detachment is conducted under conditions sufficient to obtain a detached layer that is substantially homogenous and has a low surface roughness and improved homogeneity compared to the surface roughness and homogeneity obtained from a conventional detachment annealing on a wafer having a weakened zone but not a super-weakened region.

19. (Currently Amended) A method of detaching a layer from a wafer, which comprises:

creating an weakened zone in a wafer to define the layer to be detached and a remainder portion of the wafer, such that the weakened zone includes a main region and a localized super-weakened region that is more weakened than the main region; and

initiating detachment of the layer from the remainder portion at the super-weakened region by applying heat a controlled detachment force obtained by heating at least the weakened zone wherein the heat is applied substantially evenly over substantially the entire weakened zone, and wherein the heating is controlled for evening the heating applied to the weakened zone such that the detachment initiates and propagates from the super-weakened region through the main region to detach the layer from the remainder portion,

wherein the detachment is conducted under conditions sufficient to obtain a detached layer that is substantially homogenous and has a low surface roughness and improved homogeneity compared to the surface roughness and homogeneity obtained from a conventional detachment annealing on a wafer having a weakened zone but not a super-weakened region.

20. (New) The method of claim 1, wherein the localized super-weakened region covers an angular sector on the order of several degrees at the periphery of the embrittement zone.

21. (New) The method of claim 9, wherein the localized super-weakened region covers an angular sector on the order of several degrees at the periphery of the embrittement zone.

22. (New) The method of claim 19, wherein the localized super-weakened region covers an angular sector on the order of several degrees at the periphery of the embrittement zone.